

WE CLAIM AS OUR INVENTION:

1. A removable flow restoration device comprising:

core element means having a distal portion for navigation to a therapeutic site in a lumen and for assisting in puncturing or displacing an occlusion,

5 a first filter means distally located on the core element means for collecting, displacing, or moving the occlusion,

a second filter means located on the core element means distal to the first filter means for placement distal to the occlusion to catch the occlusion or fragments thereof,

10 wherein the core element means passes through the first and second filter means, and

actuator means for expanding or collapsing the first and second filter means about the core element means.

15 2. The removable flow restoration device of claim 1 wherein the actuator means is electrolytically activated.

3. The removable flow restoration device of claim 1 wherein the actuator means is mechanically activated.

20 4. The removable flow restoration device of claim 1 additionally comprising a tip located on a distalmost end of the core element means.

25 5. The removable flow restoration device of claim 1 wherein a ratio of an outer diameter of the first filter means when expanded to an outer diameter of the first filter means when collapsed is between about 2 to 1 and 10 to 1.

6. The removable flow restoration device of claim 1 wherein a ratio of an outer diameter of the second filter means when expanded to an outer diameter of the second filter means when collapsed is between about 2 to 1 and 10 to 1.

5           7. The removable flow restoration device of claim 1 wherein the core element means is axially moveable within the first and second filter means.

10           8. The removable flow restoration device of claim 1 wherein the core element means is rotatable with respect to and non-removable from the first filter means.

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9. A removable flow restoration device comprising:

a core element comprising at least an elongated core wire having a distal end and a proximal end,

5 a proximal cage located substantially coaxial about the core element through which the core element passes,

a separator located substantially coaxial about the core element and distal to the proximal cage,

10 a distal cage through which the core element passes, located substantially coaxial about the core element and distal to the separator element, the distal cage comprising a plurality of petal-shaped members, at least one of which has a distal rake,

wherein the core element passes through the first and second cages,

15 a tubular actuator for expanding and contracting the proximal and distal cages, located substantially coaxial about the core element and proximal to the proximal cage, and

a tip member located distal to the distal cage.

20 10. The removable flow restoration device of claim 9 wherein the proximal cage comprises a woven braid of ribbons.

11. The removable flow restoration device of claim 9 wherein at least a portion of the proximal cage comprises a superelastic alloy.

25 12. The removable flow restoration device of claim 9 wherein at least a portion of the petal-shaped members comprise wires.

13. The removable flow restoration device of claim 9 wherein at least a portion of the first cage or second cage is radio-opaque.

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14. An embolism treatment device comprising:

a core element comprising at least an elongated core wire having a distal end and a proximal end,

5 a proximal cage located substantially coaxial about the core element through which the core element is axially movable,

a woven braided distal cage located substantially coaxial about the core element and distal to the proximal cage, through which the core element is axially movable within a tubular liner, and

10 an actuator for expanding and contracting the proximal and distal cages, located substantially coaxial about the core element and proximal to the proximal cage.

15 15. The embolism treatment device of claim 14 wherein the tubular liner is polymeric.

16. The embolism treatment device of claim 15 wherein the tubular liner comprises polytetrafluoroethylene.

20 17. The embolism treatment device of claim 14 additionally comprising a tubular member located substantially coaxial to the core element and distal to the distal cage for affixing a distal end of the distal cage to the tubular liner.

25 18. The embolism treatment device of claim 17 additionally comprising a radio-opaque marker affixed to the tubular member.

19. The embolism treatment device of claim 14 wherein a ratio of an outer diameter of the proximal cage when expanded to an outer diameter of the proximal cage when collapsed is between about 2 to 1 and 10 to 1.

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20. The embolism treatment device of claim 14 wherein a ratio of an outer diameter of the distal cage when expanded to an outer diameter of the distal cage when collapsed is between about 2 to 1 and 10 to 1.

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